

SURVEY REPORT

**BIO-CHEMICAL NEEDS
OF
JUVENILE PROBATION
REFERRALS**

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BIO-CHEMICAL NEEDS OF JUVENILE PROBATION REFERRALS

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ABSTRACT

The Fresno County Probation Department is examining the feasibility of using bio-chemical approaches (lighting, nutrition, color) in the treatment of juvenile offenders. Part of the examination of feasibility included a needs assessment conducted by the Juvenile Division during the first two weeks of January 1980. All juvenile intake referrals were screened using the Nutritional-Behavioral Inventory (N-BI) and a diet survey. These instruments were designed to detect bio-chemical imbalances and were used to determine whether there were sufficient numbers of juveniles within the system who could benefit from an orthomolecular approach to treatment.

The results of the survey indicated that 51% of the minors referred to intake and processed further into the system appeared to have sufficient nutritional imbalances (N-BI scores of 50 and above) to warrant further bio-chemical testing and approximately 20% appeared to require complete physical examinations (N-BI scores above 70).

The N-BI also contains a scale to screen for hypoglycemia. The survey results indicated 21% of the youths should receive further testing for hypoglycemia (scores of 4 and above).

Preliminary results also suggested that juveniles charged with multiple property offenses, serious property offenses, major crimes against persons, or alcohol and alcohol-related offenses obtained higher average N-BI and hypoglycemia scores (higher scores indicate greater bio-chemical disturbances). This was also found for female offenders, 14-16 year old youths and juveniles with prior records.

Family meal patterns were also found to be related to the scores on the N-BI and Hypoglycemia Scale. Though most youths (87%) ate at least one meal with their families, those who rarely, if ever, ate even one meal with their families showed higher average scores on both the N-BI and the Hypoglycemia Scale. In fact, 85% of these minors scored 50 or above on the N-BI and were felt to need further mineral and chemical analysis, while 53% were felt to need further testing for hypoglycemia.

These results demonstrate the presence among the juvenile probation population of serious bio-chemical problems which have been effectively treated through orthomolecular approaches with similar delinquent populations. Therefore, the Probation Department plans to begin development of programs using orthomolecular approaches to aid these minors. Future research and evaluation efforts will attempt to define other needs, develop treatment approaches and determine the efficacy of any new program or treatment approaches developed.

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INTRODUCTION

The Fresno County Probation Department remains committed to the evaluation of alternative methods of treating juvenile delinquents in an attempt to modify their behavior patterns. During the past year we have become aware of a new theory regarding the interrelationships between a person's internal body chemistry and his external behavior. Many staff have attended training regarding "Body Chemistry and Offender Behavior" in an effort to determine whether or not this approach offers a feasible way to deal with delinquent young people.

For many years corrections personnel have been concerned about the psychological makeup of offenders effecting their behavior but have paid little attention to the potential impact of nutrition and lighting upon their behavior. As staff began to receive training in this area, it became apparent that there was some research to indicate a correlation between an individual's body chemistry and his delinquent acts. In addition, probation departments and other agencies applying the theories to treatment were beginning to report some successful applications.

Following the training, discussions have been held to determine the most feasible approach to the application of these concepts within the Fresno County Probation Department. It was felt that prior to any planning or program development, it was important to analyze the present probation population in order to know the number of minors who might benefit from bio-chemical or orthomolecular approaches to treatment.

As a result, an evaluation was conducted, and the findings are reported in this paper. The results reflected that large numbers of minors probably could benefit from more sophisticated testing and treatment in the area of body chemistry. It is incumbent now upon the Probation Department to develop a pilot program which would also be subject to in-depth evaluation to determine if indeed offender behavior can be improved through successful counseling and training in the area of nutrition and body chemistry. The application of body chemistry principles to offender behavior is not expected to provide a panacea to cure all delinquency; however, it is seen as a potentially successful tool in improving the behavior of some delinquents.

SURVEY METHODOLOGY

The purpose of the survey was to assess the nutritional needs and deficiencies of minors entering the juvenile justice system, and thereby test the feasibility of the Probation Department providing remediative nutritional casework and/or education.

The survey instrument is a self-administering questionnaire, the "Nutritional-Behavioral Inventory" (N-BI) developed by Alexander Schauss of the Institute for Biosocial Research. The N-BI is relatively new, but some standardization data is available for delinquent populations.

The questionnaire consists of 50 statements describing physiological, emotional and mental disturbances or typical patterns of food intake - ("My gums bleed." "I get depressed or feel the blues over nothing." "I cannot work under pressure." and "I add sugar to most things I eat or drink."). The respondent is asked to check whether the statements occur never, rarely, occasionally or usually. The score is calculated on the basis of the number of each category checked with different point values assigned to each.

The scale of scores screens respondents into graduated categories of health, from "good health" to "recommend hospitalization". The questionnaire is generally used as an initial screening device and would never be used alone as a diagnostic tool. Since the 50 statements are essentially a list of symptoms of physical ailments, allergies or nutritional deficiencies, it has been shown to be useful in suggesting which areas of physiological functioning probably need to be checked.

The survey device also contained a two page "diet survey". Respondents were asked to list typical breakfast, lunch, dinner and snack menus and were questioned about their food preferences and eating patterns. This section was not scored, but was intended to provide information for departmental decision making about using bio-chemical approaches in probation work.

The survey questionnaire was administered to referrals to juvenile probation intake during the first half of January 1980. Approximately 100 juveniles were screened during the time period.

The minors were given the survey and asked to fill it out on their own as it was felt they would be able to give more accurate information than their parents. If the youths had reading difficulties, the probation officer helped them with the questionnaire during the intake process. All respondents were told that their answers would not effect their dispositions and that the survey was completely for research purposes.

RESULTS

Client Characteristics

A total of 99 juveniles (79 males and 20 females) appearing for juvenile probation intake during the first two weeks in January were screened with the Nutritional - Behavioral Inventory (N-BI). The minors were between the ages of 11 and 17 (average = 15.4 years) though most were 17 (31) and 16 (28) years old.

Nearly one-half (44%) of the clients were referred for property offenses. Burglary was the single most frequent referral reason (13%). Two other categories of offenses — violent personal offenses and alcohol-related offenses — comprised 15% of the referrals each. Another 9% of the referrals were for drug-related offenses. Most of the minors (76%) had been referred before for other offenses. Most of the minors (71%) were processed further into the system for additional probation or court action.

Nutritional-Behavioral Inventory Scores

The distribution of scores on the Nutritional-Behavioral Inventory (N-BI) is shown in Table 1. Few clients (13%) scored in the range indicative of good health, though more minors who were reprimanded and released with no further action scored in this range (25%) than those minors facing additional probation or court action (8%).

TABLE 1

Distribution of Client Nutritional-Behavioral Inventory Scores

| Scale Score and Category | No. of Total Clients | % | No. Release No further Prob. contact | % | No. Remaining in Probation System | % |
|-----------------------------------|----------------------------|----|--|-----|---|-----|
| 0-30 good health | 13 | 13 | 7 | 25 | 6 | 6 |
| 31-50 examine diet | 38 | 38 | 10 | 36 | 28 | 39 |
| 51-70 diet/mineral analysis | 33 | 33 | 9 | 32 | 24 | 34 |
| 71-90 complete phys. exam. | 11 | 11 | 2 | 7 | 9 | 13 |
| 91 and up hospitalization | 4 | 4 | 0 | 0 | 4 | 6 |
| TOTALS | 99 | 99 | 28 | 100 | 71 | 100 |

Approximately 40% of the clients scored in the next range indicative of adequate health possibly warranting some dietary changes. The remainder of the referrals scored in the higher ranges indicative of moderate to severe physiological disturbances. However, less than 40% of the clients released at intake with no further action, but over 50% of the clients facing additional probation or court action scored in the higher ranges of the N-BI. The differences were primarily in the number of clients scoring above 70 on the N-BI (see Table 1).

One of the scales of the N-BI is designed to detect symptoms of hypoglycemia or low-blood sugar. The scale scores correlate highly ($r = .73$) with the overall N-BI scores; that is, a person with a high hypoglycemia scale score is likely to have a high N-BI score too. A hypoglycemia scale score of 4 or above is considered high enough to warrant further blood sugar testing.

One-half of the juvenile referrals screened in the present survey scored 2 or less, while 69% scored 3 or less (average = 2.64). Thus, 31% of the minors referred to juvenile probation intake may have low-blood sugar problems.

Scoring Patterns Among Different Types of Minors

Referrals were grouped according to biographical characteristics and some differences in average N-BI scores and hypoglycemia scores were noted. Females obtained higher average scores than males on both the N-BI (females = 57; males = 49.3) and the hypoglycemia scale (females = 3.2; males = 2.5).

Differences were also seen in average N-BI and hypoglycemia scores of youths of various ages. N-BI scores were lowest among minors aged 13 and younger (average = 42.5), but highest among minors aged 14 years (average = 59.8). Table 2 lists the average N-BI and hypoglycemia scale scores by age group.

Average hypoglycemia scores followed a similar age group pattern to that seen with N-BI scores. The youngest referrals (11-13 year olds) averaged the lowest scores (1.9) with a dramatic rise in average scores seen in 14 year olds.

One explanation of the differences in scores seen between males and females and different age groups may be differences in growth, maturation, and development of the youths. That is, the hormonal changes due to maturation (earlier onset and possibly greater changes in females, and most common onset 14-15 years of age) may temporarily create greater nutritional or mineral requirements which are not compensated for or met by the youngster's diets. Thus, greater physiological imbalances show up. A simpler explanation would be that females and 14-15 year olds may maintain poorer diets and eating habits.

Offense and Prior Record Related to N-BI Scores

It was also found that juvenile probation intake referrals with prior offenses and contact with probation scored higher on the average than referrals without prior juvenile records on both the N-BI (priors = 52.7, no priors = 44.7) and the hypoglycemia scale (priors = 2.7, no priors = 2.3). In addition,

there was some evidence to suggest that minors referred for more serious offenses had higher scores and therefore more serious nutritional imbalances.

TABLE 2

Distribution of Average Client Nutritional-Behavioral Inventory Scores and Hypoglycemia Scores by Age

| Age | Average NB-I Score | % of Group Scoring 51 or above | Average Hypoglycemia Score | % of Group Scoring 4 or above |
|-------|--------------------|--------------------------------|----------------------------|-------------------------------|
| 11-13 | 42.5 | 29 | 1.9 | 14 |
| 14 | 59.8 | 77 | 3.5 | 38 |
| 15 | 50.5 | 50 | 3.6 | 50 |
| 16 | 54.7 | 54 | 2.7 | 36 |
| 17 | 47.0 | 42 | 2.2 | 26 |

Specifically, it was found that juveniles referred for major crimes against persons (murder, assault with a deadly weapon, armed robbery) had higher average scores than juveniles referred for less serious crimes against persons (battery) on the N-BI (major = 51.2, minor = 41.6) and the hypoglycemia scale (major = 2.6, minor = 1.6, see Table 3). Minors referred for more serious property crimes (multiple charges, burglary) also had higher average scores on both scales than those referred for minor property offenses (petty theft). Minors referred for alcohol-related offenses (driving while intoxicated, drunk in public) also obtained high average N-BI scores (51.3) and hypoglycemia scores (2.9). Thus, greater nutritional deficiencies seemed to be related to referrals of a more serious nature.

Family Meal Patterns

The survey results indicated that most youths (87%) referred to juvenile probation intake ate at least one meal daily with their families. Juveniles eating at least one meal daily with their families did not differ significantly on either N-BI or hypoglycemia scores (see Table 4) though minors eating breakfast with their families averaged the lowest hypoglycemia scores. The small percentage of juveniles who rarely, if ever, ate even one meal daily with their families obtained higher average scores than those who ate one or more meals with their families on the N-BI (no meals = 60.7, with family = 48.6, 50.1, or 47.0) and on the hypoglycemia scale (no meals = 3.1, with family = 2.7, 2.4, or 2.1). One explanation for these results may be that juveniles eating at least one meal with their family would probably have a parent preparing at least one meal for them. A parent would be more likely to plan and prepare balanced meals than a minor required to purchase and prepare his or her own meals.

It appears that much of the juvenile probation population suffers from mild to severe physiological dysfunctioning. There is some evidence suggesting nutritional disturbances can be correlated with poorer behavior. It will be critical, however, for future research to explore the possibility that a relationship between bio-chemistry and delinquency exists and attempt to define some of the effects of deficiencies.

TABLE 3

Distribution of Average Client Nutritional-Behavioral Inventory Scores and Hypoglycemia Scores by Referral Offenses

| Referral Offense | Average NB-I Score | % of Group Scoring 51 or above | Average Hypoglycemia Score | % of Group Scoring 4 or above |
|---------------------------|--------------------------|--------------------------------------|----------------------------------|-------------------------------------|
| Major Personal | 51.2 | 50 | 2.6 | 33 |
| Minor Personal | 41.6 | 20 | 1.6 | 0 |
| Mult. Property Charges | 57.5 | 66 | 4.0 | 42 |
| Burglary | 56.2 | 66 | 2.7 | 44 |
| Major Property | 55.0 | 50 | 2.6 | 25 |
| Minor Property | 41.5 | 36 | 2.2 | 18 |
| Alcohol Related | 51.3 | 44 | 2.9 | 31 |
| Major Drugs | * | * | * | * |
| Minor Drugs | 41.7 | 29 | 2.4 | 29 |
| Miscellaneous | 48.3 | 40 | 2.6 | 27 |

*only two persons fell in this category, so their scores were too few to average reliably.

TABLE 4

Distribution of Average Client Nutritional-Behavioral Inventory Scores
and Hypoglycemia Scores by Family Eating Patterns

| Minor/Family Eating Pattern | Average NB-I Score | % of Group Scoring 51 or above | Average Hypoglycemia Score | % of Group Scoring 4 or above |
|--|--------------------------|--------------------------------------|----------------------------------|-------------------------------------|
| Minor does not eat meals w/family | 60.7 | 85 | 3.1 | 53 |
| Minor eats one meal daily w/family | 48.6 | 41 | 2.7 | 28 |
| Minor eats two or more meals daily w/family | 50.1 | 48 | 2.4 | 27 |
| Minor eats at least breakfast daily w/family | 47.0 | 41 | 2.1 | 22 |

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